Project Leader's Report

December 2004

USDA Forest Service - Southern Research Station - 320 Green Street Athens GA 30602 - http://www.srs.fs.fed.us/disturbance

DISTURBANCE AND MANAGEMENT OF SOUTHERN ECOSYSTEMS

Table of Contents

Technology Transfer	1
Outreach Activities	1
Meetings/Report	2
Partnerships	2
Science Highlight	2
Funding	3
Visitor	3
Personnel News	4
News from Around the Region	5
Publications	6
Upcoming Events	7
GPRA Accomplishments	8

Outreach Activities:

• Two organized group with a total of 95 people visited Brender Forest during December; the Audubon Society and the Ferron Group. Forestry information was also provided to the Forehand Family Reunion from Cordele, GA.

• A total of 38 individuals came by the office at Brender Forest for information and 68 people signed the register to walk the Hitchiti Interpretive Trail. Some of these visitors came from as far away as Memphis, TN, Savannah, GA and Greenville, SC.

A permanent display was recently erected at the Hitchiti Experimental Forest. The display, located near a popular hiking trail, explains the general role of fire and prescribed burning in local forests and details of a long-term study located along the hiking trail, where individual treatment plots are identified. This education and outreach effort is supported by a grant from the Joint Fire Science Program.

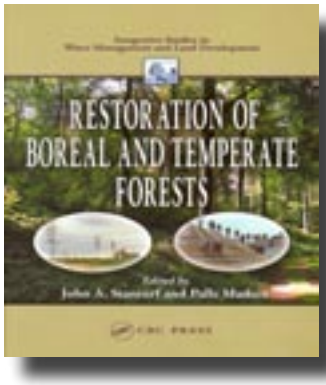
Technology Transfer:

• Yong Liu presented a poster entitled "An Assessment of Wildfire Impacting on Ecosystem from Space: Case Study for 2002 Okefenokee Wildfire", at the 2004 American Geophysical Union Meeting in San Francisco, CA.

• John Stanturf attended the 22nd Meeting of the International Poplar Commission, part of the Food and Agriculture Organization (FAO) of the United Nations. He presented a poster, "Three-year growth response of four clones of eastern cottonwood (*Populus deltoides* Bartr. ex Marsh.) to fertigation" and was co-author on another poster "Early stand development, carbon sequestration, and wildlife use under conventional versus intensive afforestation practices in the Lower Mississippi Alluvial Valley." He attended meetings of the newly formed Environmental Applications of Poplars and Willows Working Group.

• Ken Outcalt and Joe O'Brien attended the "Fire Research and Forest Management in the Coastal Plain" meeting at J. W. Jones Ecological Research Center in Newton, GA. The meeting was to facilitate research interactions among the Forest Service, The Nature Conservancy and the Jones Center.

• The long-awaited book, "Restoration of Boreal and Temperate Forests" edited by John Stanturf and Palle Madsen, Danish Forest and Landscape KVL, has been released by the publisher CRC Press. The 569-page book features 34 chapters



by more than 70 authors from 20 nations. Of these, 13 were from the Forest Service, representing three stations (Southern, Rocky Mountain, and Pacific Northwest). Besides Stanturf, SRS authors included Dale Brockway (Auburn), Emile Gardiner (Stoneville), Evan Mercer (RTP), Ken Outcalt (Athens), Jim Vose (Coweeta), and visiting scientist Jorge Paladino (Athens).

• Joe O'Brien has been invited by The Nature Conservancy to help with prescribed burning training sessions in Cuba. Because of the strained relations between Cuba and the USA, it is not certain that he will be able to participate.

Meetings/Reports:

• Alex Clark attended the Resource Management and Use Logic Model Meeting for budget planning held by the WO Research staff on December 2, in Rosslyn, VA.

Poplar grown in Chile and Argentina commonly is silvopastural; this scene from Argentina is in a non-industrial private landowner's irrigated poplar stand

• Stanturf attended the International Poplar Commission (IPC) meeting in Santiago, Chile. The IPC, formed in 1947, is one of the Technical Statutory Bodies of FAO, part of the United Nations. The IPC is the only forum that brings together managers, users, and researchers in poplars and willows to discuss topics of common interest in a cross-disciplinary manner. The IPC has played an important role in the development of national forest sectors, to a great extent through the exchange of ideas and breeding material. From the country reports submitted, a very conservative estimate of the amount of poplars and willows (natural and planted) globally is 80 million hectares. Large areas in South America are planted to poplars and willows, despite which there are no native poplars and only one native willow. Uzbekistan was accepted as the 29th member of IPC, subject to approval by the Director-General. India (Indian Forest Research Institute at Dehra Dun) and China (Chinese Academy of Forestry) submitted proposals to host the next IPC meeting, in 2008. The decision from the Director-General will not be made before 2006, and other proposals may come in. A new Working Group was formed, Environmental Applications of Poplars and Willows. Officers are Kurth Perttu (Sweden), Jud Isebrands (USA), and Drusilla Riddell-Black (UK). The group will focus on use of poplars and willows for phytoremediation, buffer zones, and provision of ecosystem services such as carbon sequestration.

The Chimbarongo region of Chile is known for its basket willow products and export of raw willow material. This machine is used to debark the willow canes before drying.

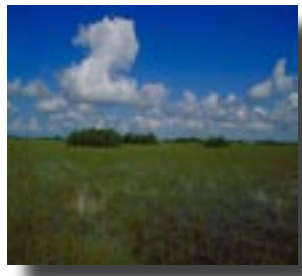
• Also approved at the IPC meeting was a proposal from Jim Richardson (Canada) and Jud Isebrands (USA) to coordinate a revision of the book *Poplars and Willows*, first published in 1958 and last revised in 1980. In addition to updating the information, there will be new sections in environmental uses and rural development. Chapter lead authors have been recruited and co-authors are being added. The book will appear initially in electronic form on the FAO website, with the possibility of further development into a printed publication.

• The management team of the Savannah River Forest Institute will meet in Athens from Jan 25-27. Gary Achtemeier is coordinating presentations from staff on smoke research. All the units at Athens will host a tour of the Athens facility and describe on-going research.

Stanturf, Ralph DiCosty, John Moore, and others will meet with William Nightingale, Oconee National Forest district ranger, in January to discuss research on the Hitchiti Experimental Forest and the Chattahoochee/Oconee National Forest Plan.

Prescribed burning in the winter on the Hitchiti Experimental Forest.

Partnerships:



Tree island in the Everglades National Park

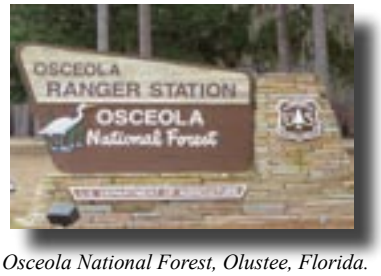
• Joe O'Brien will be traveling to Everglades National Park to take aerial infrared photos of tree islands in an experiment to see if the images are capable of measuring tree stress. He will be working with Dr. Michael Ross and Dr. Steve Oberbauer, both of Florida International University. The project is part of a study of the effects of Everglades hydrological restoration efforts on forests embedded in the marsh landscape.

• Stanturf has been invited to serve on a planning committee for the IUFRO Poplar Genetics Working Group meeting in China in 2006. Brian Stanton, Greenwood Resources (USA) and Shengzuo Fang (China) are the program chairs.

Science Highlight:

• Although the regulatory focus of the Environmental Protection Agency (EPA) is currently directed toward curbing Mercury (Hg) emissions from electric utilities, Hg emissions from prescribed burning present a potential impact on air quality. The sources of atmospheric Hg are controversial; a recent article in the Lufkin, Texas Daily News included a debate between spokespersons for an electric utility and the US Forest Service concerning the relative importance of Hg emissions from power plants versus prescribed burning. Whatever the source of the emissions, Hg deposition is relatively high in the South. In light of the elevated levels of Hg deposition in the South and the large acreage of Southern forests that are prescription-burned annually (2-4 million acres per year), the re-emission of atmospherically deposited Hg by Southern prescribed burning should be quantified. However, only limited data on Hg emissions from forest fires (prescribed or wild) in the US are available. Most of these data originate from regions outside the South. Estimates of Hg emissions from US wildfires in the lower 48 states vary from 3-14% of the total US anthropogenic emissions, and are based on

extrapolation of data from the Western and Great Lake states. Our recent data from the Osceola National Forest (Florida), if extrapolated, suggest that South-wide emission of Hg from prescribed fire is small (0.2% of total US anthropogenic emissions). These data further suggest, although trends were not statistically significant, that prescribed fire may lead to the buildup of Hg in subsoil due to post-fire leaching of Hg from ashen fire debris. This retention of Hg in subsoil may reduce Hg volatilization during future fires and reduce the transport of Hg to surface waters as runoff. These data provide an initial assessment of Southern prescribed fire's effect on the Hg cycle; however policy makers likely will require data from more than one site. A team led by Ralph DiCosty submitted a proposal to the Joint Fire Science Program that would allow us to compile a more comprehensive picture of the significance of mercury re-emission from prescribed burning in Southern forests.

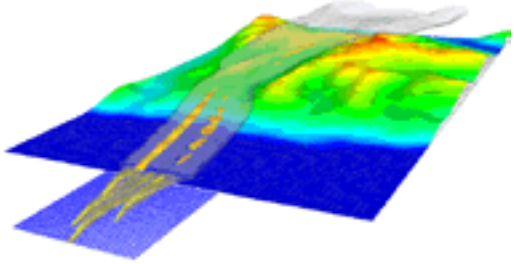


Osceola National Forest, Olustee, Florida.

Funding:

• Joe O'Brien received confirmation that the JFSP proposal, "Best management practices for fuels management in sub-tropical pine flatwoods and tropical pine rocklands," was funded for $202,662.

• Mike Wimberley and John Stanturf received confirmation that their JFSP proposal, "Best management practices for fuel reduction treatment in loblolly pine forests" was funded for $147,000.



Simulation results of merging plumes encountering a variable terrain.

• Scott Goodrick submitted a proposal to the Joint Fire Sciences Program (JFSP) entitled "Application of Extreme Programming Principles to Technology Transfer – Integrating End-Users in the Delivery of Research Results to Operations." If funded, this work would cooperate with the New Media Institute at UGA to investigate a customer-centric approach to diffusing research results to the user community. Specifically, the project will focus on applying the principles of extreme programming to develop new products from the Southern High Resolution Modeling Consortium for fire weather.

• Goodrick was a Co-PI on a JFSP proposal with the National Institute of Standards and Technology and the Wildland-Urban Interface unit in Gainesville (William Mell, Ron Rehm, Alex Maranghides, Glenn Forney, Wayne Zipperer, Scott Goodrick) for "New High-Resolution, Multiple-Plume Smoke Dispersion Model for Land Managers." The objective of this project is to investigate the utility in wildland-urban interface fuel management of a fire behavior and smoke dispersion model for structures that was developed at NIST.

• Mac Callaham and Tom Waldrop submitted a JFSP proposal for "Using Prescribed Fire and Other Fuel Treatments to Achieve Yellow Pine Restoration Objectives in Southwestern Virginia." This work, in conjunction with the George Washington-Thomas Jefferson National Forest, responds to a local need identified by personnel on the Clinch River Ranger District. Major objectives include determining if prescribed fire alone, thinning alone, or the combination of thinning and fire can restore degraded yellow pine stands.

• Joe O'Brien and Kevin Hiers (The Nature Conservancy) submitted a JFSP proposal for "Development of a Weather Station Sensor and a Simple Model for Estimating Ignition Probability of Smoldering Fires in Forest Floor Organic Matter." The need for such a sensor developed from work funded by the JFSP and National Fire Plan to look at mortality of overstory longleaf pines when fire was re-introduced following a long-period of fire suppression. Two tools are planned: a self-contained sensor that estimates duff moisture independent of weather station data, and an index of duff moisture that can be derived from simple, widely available weather measurements coupled with estimates of evapotranspiration for use at inaccessible sites.

• Yong Liu is cooperating on a proposal submitted by John Qu, Ruixin Yang, and Xianjun Hao of George Mason University and the NASA/Goddard Space Flight Center and Al Riebau, USFS Washington Office on "Real-time Fuel Moisture and Fire Danger Mapping in the Eastern States Using Satellite Remote Sensing Measurements." This work would further develop applications of MODIS (NASA's Moderate Resolution Imaging Spectroradiometer) for estimating fuel moisture and fire danger in the Eastern US.

•Ralph DiCosty, John Stanturf, Mac Callaham, and Tom Waldrop submitted a JFSP proposal to answer the question, "Does Prescribed Burning in Southern Forests Release Significant Amounts of Mercury into the Atmosphere?" This proposal is described in the Science Highlight section.

• Richard Reitz submitted two proposals to the Joint Fire Sciences Program. One project would fulfill a research need expressed by both national forest and national wildlife refuge staffs on the effects of prescribed burning, particularly growing season burns, on diversity and abundance of vegetation. The proposal is an offshoot of ongoing research begun in 1989 with five different burn frequencies, seasons, and characteristics to compare surface vegetation changes across growing and dormant seasons. In the new study, ectomycorrhizae will be inventoried with DNA technology to determine subsurface plant community changes supported by these different burn frequencies, seasons, and characteristics.

• The second proposal submitted by Rick fills a wildland fire science training gap in agencies and schools of higher education in the South. There are twenty-four colleges and universities with forestry or natural resource programs in the thirteen southern states, but of these schools, six have a single semester course dedicated to fire science; seven have a single semester course in forest protection, which covers insect, disease, and fire; and the remaining eleven schools have no discernable course about fire science in their curriculum. Rick proposes to produce a three-semester equivalent, upper-division, multi-disciplinary college course on wildland fire science that will produce readily understandable and useful information syntheses on key topics of critical interest to the fire and fuels management community. This course would be appropriate for classroom, distance, and continuing education offerings. The University of Georgia has offered to support course development and be the host institution.

Visitors:

• Phil Dougherty and Phil Dunham, with MeadWestvaco, Summerville, SC, visited with Alex Clark on December 16 to discuss the wood properties of clonal loblolly pines planted on different sites.

Personnel News:

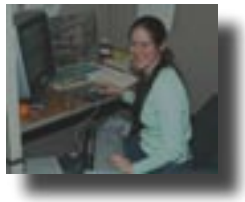
• Congratulations to Mac Callaham and Andrea Sillletti on their new addition to the Forest Service family, Lilyanne Grace Callaham (born December 2nd, 8 lbs 1 oz, 22.25 inches long, cranial circumference: 13 1/4 inches).

• More congratulations to Mac Callaham on receiving the Director's Early Career Scientist Award. This places Mac in the running for the Chief's Award and a Presidential Award. Mac was recognized for the hard work and leadership he has exhibited since joining the work unit in 2000.

• Welcome to Kathryn "Kat" Smith, a new volunteer in Athens assisting Joe O'Brien with work on ecophysiology. Cat is a student at the University of Florida, Gainesville, and will be with us for about 8 months.

• Congratulations to Sandra Rideout-Hanzak who accepted a position as Assistant Professor of Range and Fire Science at Texas Tech University in Lubbock, Texas. Sandra has been a post-doctoral Research Forester with the RWU since June 2000. She began in Athens working on Florida wildfire projects. Later she moved to Clemson to join the Appalachian and Piedmont team and work on their hyperspectral imaging project. She is excited to move back to Texas and to have unlimited opportunities to start fires. Sandra will begin her new job in August 2005.

• Drew Zwart, a graduate student at Clemson University, successfully defended his thesis and received an M.S. degree on December 16. Drew worked under the direction of Drs. Steve Jeffers and Tom Waldrop on the incidence of root-borne diseases after fuel reduction treatments in Piedmont pine-hardwood stands and southern Appalachian hardwood stands. His study was a component of the National Fire and Fire Surrogate Study. Drew's work showed that *Leptographium* incidence was reduced in hardwood stands in all post-treatment areas including controls. However, incidence was apparently reduced by fuel reduction. Diseases caused by Phytophthora in pine-hardwood stands were increased by thinning and burning alone but decreased by the combination of thinning and burning. Drew will continue as an employee of Clemson University and publish two papers from his thesis. Congratulations to Drew.



• Elizabeth Blizzard, an M.S. student in Forest Resources at Clemson University, on December 3 successfully defended her thesis entitled "Performance of mixed pine-hardwood stands 16 years after fell and burn treatments." This work continued a study begun by Tom Waldrop in 1987. Elizabeth showed that season of harvest and site-preparation burning can have long-term impacts on productivity and species composition. Pine productivity was favored by spring harvesting and burning while oak abundance was greater where stands were harvested in winter and left unburned. In all cases, pines overtopped hardwoods by age 8, indicating that pine-hardwood mixtures can be obtained with little to no site preparation on dry sites. Elizabeth will complete her thesis this month and begin a fire internship at Kings Mountain National Military Park in January. Congratulations to Elizabeth.

• Cynthia Fowler, Research Ecologist (Postdoc) at Athens, has accepted a position as Assistant Professor of Anthropology at the University of Hawaii. Congratulations to Cynthia, who reports to her new position in January 2005. She can be reached at cynthiafowler@gmail.com .

• Morgan Taylor, student worker in Athens, resigned as she graduated this semester. She has many exciting plans but will return to hometown Thomasville, GA for now.

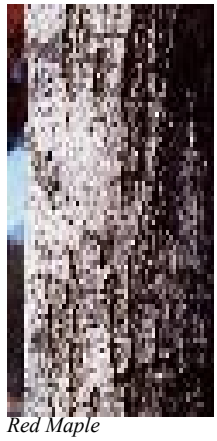
• Eric Neiswanger and Jason O'Shell attended the following training courses; S-270 Basic Air Operations, I-200 Basic Incident Command, and S-290 Intermediate Fire Behavior during November and December 2004 at the Florida Center for Wildfire and Forest Resources Management Training Center, Brooksville, Florida.

From the Cover (Masthead) - Barks of Southern Forests.

Loblolly Pine
Pinus taeda L.

Longleaf Pine
Pinus palustris P. Mill.

Eastern Cottonwood
Populus deltoides



Red Maple
Acer rubrum

Dogwood
Cornus florida

White Oak
Quercus alba

Eastern Red Cedar
Juniperus virginiana

• Linda Donahue, Director of the North Central Research Station, has announced that she plans to retire in March of this year.

• Boise Cascade, LLC has agreed to sell approximately 2.2 million acres of timberland located across the Pacific Northwest, Louisiana, Alabama, and Minnesota to Forest Capital Partners, LLC, an independent investment firm with headquarters in Boston, MA, for $1.65 billion in cash. As part of the transaction, Boise will enter into a number of long-term fiber supply agreements with Forest Capital, ensuring the continued supply of fiber to Boise's pulp and paper mills and wood products manufacturing facilities.

• Brian Stanton, geneticist with Greenwood Resources and developer of many cottonwood and hybrid poplars, is attempting to gain support for a *Populus* germplasm repository and may seek a grant from the NSF Living Stock Collections (LSC) program. The LSC supports operation of and improvements in outstanding collections of living organisms used in basic biological research. The program provides support for two types of projects. Short-term projects are one-time awards (up to 36 months) leading to innovative handling of living stocks or to well-defined improvements in existing collections, including those not otherwise supported by LSC. Long-term awards (up to 60 months) support ongoing operation of significant collections. Collections receiving long-term support are expected to receive support from other sources, including user fees.

• Recent developments in *Populus*-using forest industry underscore the need for such a germplasm collection. In the West, land formerly owned by Boise Cascade was recently sold to Forest Capital Partners, LLC. The fiber farm (hybrid poplars) is aligned with the Wallula pulp mill and not with their forest resources, so it was not included in the sale of timberlands. Nevertheless, there is concern that the pulp and paper business segment will not support continuing research in poplar tree improvement. There are also indications that the fiber farm is larger than needed to support the mill, so part of the acreage may still be sold off. In the East, Tembec is attempting to change the inputs to their St. Francisville, Louisiana mill from all cottonwood to all pine. The future of the company's cottonwood clone bank and nursery at Fitler, MS is unclear. The loss of this valuable germplasm would be especially unfortunate, especially as a cottonwood (*Populus trichocarpa*) was the first tree species to have its genome fully sequenced.

• The Institute of Forest Biotechnology has moved to the Centennial Campus of North Carolina State University, in the building known as Venture III. Their mailing address is 920 Main Campus Drive, Suite 101, Raleigh, NC 27606. Phone numbers are Bob Kellison: 919-424-4461; Susan McCord: 919-424-4462; Fax: 919-424-4401. E-mail addresses are bob_kellison@forestbiotech.org and susan_mccord@forestbiotech.org; url http://www.forestbiotech.org.

AGROFORESTRY

• The National Agroforestry Center (NAC) is being realigned within the Forest Service to better position it to garner national support and to adjust to the recent reorganization of Natural Resources Conservation Service (NRCS). Last month the Chief approved the administrative transfer of NAC (both the State & Private Forestry technology transfer program and the Research Work Unit RMRS-4551) from the Rocky Mountain Research Station (RMRS) to the Southern Research Station (SRS) in Asheville, North Carolina. Program Manager, Dr. Greg Ruark, will report to the SRS effective December 26, 2004, where he will be located on the campus of Alabama A&M University (AAMU) in Huntsville, Alabama. This will allow NAC to build on agroforestry momentum in the Southeast and to continue to expand its efforts with AAMU and other historically black universities through the 1890 Agroforestry Consortium. Agroforestry efforts in the Great Plains will continue unabated. All other FS personnel at the Lincoln Lab will be retained there, but they will report to the Program Manager in Huntsville.

• A new report from the National Council for Science and the Environment (NCSE) provides recommendations for closing the gap between water science and water policy. *Water for a Sustainable and Secure Future: A Report of the 4th National Conference on Science Policy and the Environment* explores science-based strategies for achieving water sustainability. The report is based on a conference that attracted more than 800 scientists, policymakers, business executives and civil society representatives from 46 states and 14 countries. Participants crafted recommendations about the role of science in achieving sustainable relationships among water, people and the environment. The complete text of the conference report, *Water for a Sustainable and Secure Future*, is available at the NCSE conference website. A second report containing Jared Diamond's lecture, *Lessons from Environmental Collapses of Past Societies,* is also available online at www.NCSEonline.org. (Source: NCSE press release)

• After months of strong urging by the scientific community, the U.S. Treasury Department ruled on December 16th that publishing is not to be restricted by trade embargoes. Therefore, publishers located in the U.S., including university presses and scholarly journals, need not apply for a license in order to edit or publish works by authors in Cuba, Iran, or Sudan. Limited to these countries, the ruling, which appears to reverse earlier decisions, was made two years after the Treasury Department was charged with determining whether trade embargoes also applied to publishing. In the ruling issued by the by the department's Office of Foreign Assets Control, permitted activities include collaborating with authors in embargoed countries, substantive editing, payment of royalties, and adding photographs. (Source: American Society Agronomy Science policy Report)

• The National Commission on Science for Sustainable Forestry released a report, "Science, Biodiversity and Sustainable Forestry," that presents findings of the Commission to date. The report presents 18 findings in four key areas: 1) landscape patterns, 2) disturbance dynamics, 3) biodiversity indicators, and, 4) adaptive management. The Commission has also issued a Request for Proposals for a project to evaluate the success of Adaptive Management as applied by different organizations. The Findings Report and the RFP are available at: www.NCSSF.org.

• Terry Barton, the former Forest Service employee convicted of causing the Hayman fire, the largest wildfire in Colorado history, has had her 12-year state prison sentence thrown out by the Colorado Court of Appeals. The Appeals Court determined that Teller County District Judge Edward Colt overstepped his authority when he sentenced Barton to double the normal maximum sentence for her crime. Also, the court determined that Judge Colt should have recused himself because he failed to disclose how the fire affected him personally. Colt evacuated his home for a night because of smoke from the fire. A new sentencing hearing before a different judge should result in a sentence of not more than six years, the maximum sentence allowed for fourth-degree arson without "aggravating circumstances." (Source: Denver Post)

Publications

FY 2005 Publications: (* denotes new publication this month)

Refereed Journals and Book Chapters

*Baumhauer, Madsen, P., **Stanturf, J.A**. 2005. Regeneration by direct seeding—a way to reduce costs of conversion. Chapter 22 in Stanturf, J.A. and Madsen, P, eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 349-354.

*Brockway, D.G., **Outcalt, K.W**., Tomczak, D.J., Johnson, E.E. 2005. Restoring longleaf pine forest ecosystems in the southern U.S. Chapter 32 in Stanturf, J.A. and Madsen, P, eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 501-519.

*Gardiner, Emile S., **Stanturf, John A**., Schweitzer, Callie J. 2004. An afforestation system for restoring bottomland hardwood forests: biomass accumulation of Nuttall oak seedlings interplanted beneath eastern cottonwood. *Restoration Ecology* 12(4): 525-532.

Haight, Robert G., **Cleland, David T**., Hammer, Roger B., Radeloff, Volker C., Rupp, T. Scott. 2004. Assessing fire risk in the wildland-urban interface. *Journal of Forestry* 102(7): 41-48.

Hoadley, Jeanne L., Westrick, Ken, Ferguson, Sue A., **Goodrick, Scott L**., Bradshaw, Larry, Werth, Paul. 2004. The effect of model resolution in predicting meteorological parameters used in fire danger rating. *J. Applied Meteorology*, 43(10): 1333-1347.

*Long, Alan J., **Wade, Dale D**., Beall, Frank C. 2004. Managing for fire in the interface: Challenges and opportunities. Chapter 13 *in* Vince, Susan W., Duryea, Mary L., Macie, Edward A., Hermansen, L. Annie, eds., *Forests at the Wildland-Urban Interface*. CRC Press, Boca Raton. P. 201-223.

***Paladino, J.C.L**., Guapyassú, M.S., Platais, G.H. 2005. Restoration practices in Brazil's Atlantic rainforest. Chapter 27 in Stanturf, J.A. and Madsen, P, eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 5409-422.

***Stanturf, J.A**. 2005. What is forest restoration? Chapter 1 in Stanturf, J.A. and Madsen, P., eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 3-11.

Stanturf, J.A., Conner, W.H., Gardiner, E.S., Schweitzer, C.J., and Ezell, A.W. 2004. Recognizing and overcoming difficult site conditions for afforestation of bottomland hardwoods. *Ecological Restoration* 22(3): 183-193. (Counted in last year)

***Stanturf, J.A.** and Madsen, P. 2005. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. 569 pp.

***Stanturf, J.A**. and Madsen, P. 2005. Preface in Stanturf, J.A. and Madsen, P, eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. ix-xvii.

*Van Lear, D.H. and Wurtz, T.L. 2005. Cultural practices for restoring and maintaining ecosystem function. Chapter 11 *in* Stanturf, J.A. and Madsen, P., eds. *Restoration of Temperate and Boreal Forests*. CRC Press, Boca Raton. P. 173-192.

Proceedings and Reports

Fowler, C. 2004. *Fire education programs in the Southern United States.* Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

Fowler, C. 2004. *Human health and forest fires in the Southern United States*. Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

Fowler, C. 2004. *Effects of Fire on cultural resources in the Southern United State*s. Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

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Helmers, J. and **Fowler, C.** 2004. *Fire in the Wildland-Urban Interface*. Encyclopedia of Southern Fire Science http://www.forestencyclopedia.net. USDA Forest Service, Southern Research Station.

Myers, R., **Wade, D**., and Bergh, C. 2004. Fire management assessment of the Caribbean pine (*Pinus caribea*) forest ecosystems on Andros and Abaco Islands, Bahamas. GFI Publication no. 2004-1. The Nature Conservancy, Arlington, VA. 18 pp.

Reitz, Richard D. and Geissler, George L. 2003. Community advisor—Firewise. In Proc. Society of American Foresters National Convention, 25-29 October 2003, Buffalo, NY. P. 63-72.

Abstracts and Posters

DiCosty, R., Kelley, S., Rials, T., **Stanturf, J.A.** 2004. Soil black carbon levels and soil organic matter quality under interval prescribed burning in the southeastern United States. Eurosoil 2004, 4-12 September, Freiburg, Germany [Poster]

DiCosty, Ralph and Stanturf, John. 2004. Fifty years of prescribed burning: effects on soil organic matter composition and podzolization in a Spodosol soil profile in the Southeastern United States. Soil Science Society America Annual Meeting Abstracts.

*Gardiner, Emile S., **Stanturf, John A**., Hamel, Paul B., and Leininger, Theodor D. 2004. Early stand development, carbon sequestration, and wildlife use under conventional versus intensive afforestation practices in the Lower Mississippi Alluvial Valley. 22nd Session International Poplar Commission, The Contribution of poplars and willows to sustainable forestry and rural development, Santiago, Chile 29 Nov-2 Dec 2004; p. 96 [Abstract]

Goodrick, Scott, Liu, Yongqiang, and Stanturf, John. 2004. Spatial modeling of drought using artificial neural networks. In Impacts of the Drought and Heat in 2003 on Forests, Berichte Freiburger Forstliche Forschung, Heft 57: 18.

Liu, Y., G. Achtemeier, and S. Goodrick. 2004. Air quality effects of prescribed fires simulated with CMAQ. The Third Models-3 Workshop, Chapel Hill, NC, 18-20 Oct 2004. (Extended abstract, paper 6.5, pp 1-4, available from http://www.cmascenter.org/html/2004_workshop/abstracts_presentations.html.

Liu, Yongqiang, Stanturf, John, and Goodrick, Scott. 2004. Modeling ecosystem water stress and fire risk under drought conditions. In Impacts of the Drought and Heat in 2003 on Forests, Berichte *Freiburger Forstliche Forschung*, Heft 57: 56.

***Stanturf,** Bland, Samuelson, Leininger, Burke. 2004. Three-year growth response of four clones of eastern cottonwood (*Populus deltoides* Bartr. ex Marsh.) to fertigation. 22nd Session International Poplar Commission, The Contribution of poplars and willows to sustainable forestry and rural development, Santiago, Chile 29 Nov-2 Dec 2004; p. 118 [Abstract]

***Stanturf**, Bland, Samuelson, Leininger, Burke. 2004. Three-year growth response of four clones of eastern cottonwood (*Populus deltoides* Bartr. ex Marsh.) to fertigation. Biomass and bioenergy production for economic and environmental benefits, Short Rotation Woody Crops Operations Working Group Biennial Meeting, Charleston, SC November 2004; p. 59 [Abstract]

Upcoming Events:

2005

Jan 30-Feb 4 9th International Symposium on Soil and Plant Analysis, Cancun, Mexico http://www.spcouncil.com/ISSPA%20Page/Cancun20033.pdf.

*Feb 1-2 3rd Symposium on Hemlock Woolly Adelgid in the Eastern United States, Asheville NC; http://www.saveourhemlocks.org/conference/conference.shtml

*Feb 15 Forest Service Research Advisory Committee meeting, Albuquerque; Stanturf to attend

*Feb 16-18 Wildland Fire 2005 and National Fire Plan Conference, Albuquerque, NM; http://www.iafc.org/conferences/wildland/index.asp

Feb 28-Mar 4 13th Biennial Southern Silvicultural Research Conference, Memphis http://www.srs.fs.usda.gov/disturbance/bssrc

Mar 13-16 Emerging Issues Along Urban/Rural Interfaces: Linking Science and Society; Atlanta, IUFRO 6.00; http://www.sfws.auburn.edu/urbanruralinterfaces/

*Mar 16-18 Coastal Plains Chapter of the Society for Ecological Restoration and the Florida Chapter of The Wildlife Society joint meeting, Brooker Creek Preserve, FL

Mar 21-24 USDA Symposium Greenhouse Gases In Agriculture and Forestry: Refining Knowledge and Building Tools, Baltimore, MD; http://soilcarboncenter.k-state.edu/conference

Mar 29-Apr 6 Global Soil Change: Time-Scales and Rates of Pedogenic Processes,Montecillo, Mexico. http://www.iuss.org/popup/Mexico%202005.htm

*Apr 19-21 Resource Management Tools & Geospatial Conference, "Envisioning Information," Phoenix, Arizona (with short courses on April 18 & 22)

Apr 25-27 Biennial Georgia Water Resources Conference, Athens; http://ga.water.usgs.gov/gwrc/callforpapers.html

*Apr 26-29 IUFRO conference on Biodiversity and Conservation Biology in Plantation Forests to be held in Bordeaux, France; http://www.pierroton.inra.fr/IEFC/manifestations/IUFROD82005.html

May 11-13 Conference on Remote Sensing and Fire, to be held at George Mason University in Fairfax, VA.

Jun 20-24 5th International Conference on Forest Vegetation Management, IUFRO Research Group 1.13.00 Forest Vegetation Management. Corvallis, Oregon, USA. **Abstracts for selection submitted on-line by November 30, 2004**. http://outreach.cof.orst.edu/icfvm/index.htm

Jun 6-10 National Silviculture Workshop, "Restoring fire-adapted forested ecosystems" Granlibakken Conference Center in Tahoe City, California

*Jun 12-16 5th North American Forest Ecology Workshop, Aylmer, Quebec, Canada; http://www.unites.uqam.ca/gref/nafew2005/

Jun 20-24 5th International Conference on Forest Vegetation Management, IUFRO Research Group 1.13.00 Forest Vegetation Management. Corvallis, Oregon, USA. http://outreach.cof.orst.edu/icfvm/index.htm

*Jul 17 – 20 American Society Agricultural Engineers (ASAE) annual meeting, Tampa, Florida; session on Forest Engineering Contributions to Biomass Collection and Transport organized by Bryce Stokes, Email: bstokes@fs.fed.us

Jul 18-22 AFFORNORD, Conference on Effects of Afforestation on Ecosystems, Landscape & Rural Development, Reykholt, Ice land; http://www.skogur.is

*Aug 5-7 IUFRO meeting, Improving Productivity in Mixed-Species Plantations, Southern Cross University, Lismore, Australia; contact dnichols@scu.edu.au

Aug 8-13 IUFRO World Congress, Brisbane, Australia. Stanturf to attend. http://www.iufro2005.com

Sep 9-10 Pre-Conference Workshop in association with Pedometrics 2005 Conference, Gainesville, FL. http://conference.ifas.ufl.edu/pedometrics/#optional

Sep 10-12 European Forestry Institute annual conference and Scientific Seminar "Multifunctional Forest Ecosystem Management in Europe: Integrated approaches for considering the temporal, spatial and scientific dimensions" Centre Tecnològic Forestal de Catalunya (CTFC), Barcelona, Spain

Sep 12-14 Pedometrics 2005: Frontiers in Pedometrics, Naples, FL. http://conference.ifas.ufl.edu/pedometrics/

Sep 12-18 Society for Ecological Restoration 17th International Conference,Zaragoza, Spain. http://www.ecologicalrestoration.net

*Oct 15-20 International conference on "Metal fluxes and their stress on terrestrial ecosystems," Centro Stefano Franscini, Monte Verità, Ascona, Switzerland; http://www.waldschutz.ch/bioindic/monte_verita/ [Abstracts due 1 May 2005]

Oct 17-19 23rd Tall Timbers Fire Ecology Conference "Fire In Grassland and Shrubland Ecosystems", Bartlesville, OK; http://www.talltimbers.org

Oct 19-23 Society American Foresters Annual Meeting, Ft. Worth, TX

Nov 6-10 Soil Science Society of American Annual Meeting, Salt Lake City, UT

*Nov 15-17 Fire in Eastern Oak Forests: Delivering Science to Managers, Ohio State University, Columbus, OH; contact Matt Dickinson mbdickinson@fs.fed.us

2006

Jul 9-15 18th World Congress of Soil Science, in Philadelphia, PA http://www.18wcss.org

Oct 25-29 Society American Foresters Annual Meeting, Pittsburgh, PA

GPRA -Accomplishment

Category	FY 2004 Total	FY 2005 Total
Number of Refereed Journal Publications	20	11
Number of Non-Refereed Publications (include abstracts)	89	15
Number of Publications (refereed + non-refereed)	109	26
Number of Tours	41	12
Number of Short Courses/Training	20	6
Number of Invited Presentations to Scientific Organizations	12	2
Number of Invited Presentation to Lay Organizations	30	9
Volunteer Presentations to Scientific Organizations (non-GPRA	42	13
Number of Technology Transfer Activities (other than above)	105	46
Outside Funding	$2,610,574	$977,969

The 4104 Bowling Team in their new uniforms.

SRS-4104 Project Leader's Report

John Stanturf - Editor Lynne Breland - Technical Writer Patricia A. Outcalt - Production, Design and Layout